Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the Application for patent.

1. (CURRENTLY AMENDED) A method of delivering a particle to a mammal comprising the steps of:

contacting a functionalized particle with a tag, wherein the particle is selected from the group consisting of hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan and a functionalized portion is a nitrogen-containing functional group; and

introducing the functionalized and tagged particle to a mammal,

wherein the functionalized portion of the particle is directly associated with the tag ~~is selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde group and amine group,~~ and wherein the particle is ~~a biodegradable or nodegradable polymer and~~ less than 1.0 mm in diameter.

2. (CURRENTLY AMENDED) The method of claim 1, wherein the functionalized particle ~~is a~~ further includes a label selected from the group consisting of light-emitting species, isotopic, nuclear or radioactive species and image contrast agent ~~polymer selected from the group consisting of polyelectrolyte, hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan~~.

3. (CURRENTLY AMENDED) The method of claim 1, wherein the tag is an antibody ~~selected from the group consisting of drug, antibodiy, ligand, antigen, protein, peptide, nucleic acid sequence, fatty acid moiety, carbohydrate moiety, label, light-emitting species, radioactive species, nuclear species, contrast agent, and combinations thereof~~.

4. (CURRENTLY AMENDED) The method of claim 1, wherein the particle is protective, diagnostic, or therapeutic for an ocular disease ~~one or more diseases selected from the group consisting of the eye, liver, brain, pancreas, spleen, kideny, and lung~~.

5. (CURRENTLY AMENDED) A method of using a functionalized particle to treat a patient in need thereof comprising the step of:

introducing the functionalized particle to the patient,

wherein the particle is selected from the group consisting of hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan and a functionalized portion is a nitrogen-containing functional group, wherein the functionalized particle crosses a physiologic barrier ~~portion of the particle is selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde group and amine group~~, wherein the particle is ~~a biodegradable or nodegradable polymer and~~ less than 1.0 mm in diameter, and wherein the functionalized particle is introduced to the patient intraocularly, by injection, or by mouth.

6. (CURRENTLY AMENDED) The method of claim 5, wherein the functionalized portion is hydrazide or an amine ~~particle is a polymer selected from the group consisting of polyelectrolyte, hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan~~.

7. (CURRENTLY AMENDED) The method of claim 5, wherein the functionalized particle is further modified with an antibody ~~a tag selected from the group consisting of drug, antibodiy, ligand, antigen, protein, peptide, nucleic acid sequence, fatty acid moiety, carbohydrate moiety, label, light-emitting species, radioactive species, nuclear species, contrast agent and combinations thereof~~.

8. (ORIGINAL) The method of claim 5, wherein the functionalized particle is less than 700 nm.

9. (CURRENTLY AMENDED) A functionalized particle comprising:

a functionalized particle, wherein the particle is selected from the group consisting of hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan and a functionalized portion is a nitrogen-containing functional group, wherein the functionalized portion is directly associated with a tag ~~of the particle is selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde group and amine group~~, and wherein the particle is ~~a biodegradable or nodegradable polymer and~~ less than 1.0 mm in diameter; and

the ~~a~~ tag in contact with ~~contacting~~ the functionalized particle.

10. (CURRENTLY AMENDED) The functionalized particle of claim 9, wherein the tag is an antibody ~~selected from the group consisting of drug, antibodiy, ligand, antigen, amino acid sequence, nucleic acid sequence, fatty acid moiety, carbohydrate moiety, label, light-emitting species, radioactive species, nuclear species, contrast agent, and combinations thereof~~.

11. (CURRENTLY AMENDED) The functionalized particle of claim 9, wherein the particle is for an ocular disease ~~a patient in need thereof for diagnosis, prevention or treatment~~.

12. (CURRENTLY AMENDED) The functionalized particle of claim 9, wherein the functionalized portion is hydrazide or an amine ~~particle is a polymer selected from the group consisting of polyelectrolyte, hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan~~.

13. (CURRENTLY AMENDED) A method of enhancing delivery of a particle to the posterior portion of the eye, comprising the steps of:

preparing an ocular particle comprising a functionalized particle, wherein the particle is selected from the group consisting of hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan and a functionalized portion is a nitrogen-containing functional group, ~~functionalized portion of the particle is selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde group and amine group~~, ~~and~~ wherein the particle crosses a physiologic barrier and is ~~a biodegradable or nodegradable polymer and~~ less than 1.0 mm in diameter; and

introducing the ocular particle to a ~~patient~~ subject in need thereof.

14. (ORIGINAL) The method of claim 13, wherein the ocular particle is introduced intraocularly, by injection, or by mouth.

15. (CURRENTLY AMENDED) The method of claim 13, wherein the ocular particle further comprises an antibody ~~a tag selected from the group consisting of drug, antibodiy, ligand, antigen, protein, peptide, nucleic acid sequence, fatty acid moiety, carbohydrate moiety, label, light emitting species, radioactive species, nuclear species, constrast agent and combinations thereof~~.

16. (CURRENTLY AMENDED) The method of claim 13, wherein the functionalized portion is hydrazide or an amine ~~particle is a polymer selected from the group consisting of polyelectrolyte, hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan~~.

17 (CURRENTLY AMENDED) A method of crossing a physiologic barrier with a functionalized particle comprising the steps of:

contacting the functionalized particle with a tag, wherein the particle is selected from the group consisting of hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan and a functionalized portion is a nitrogen-containing functional group, wherein the functionalized portion of the particle is directly associated with the tag ~~selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde group and amine group~~, and wherein the particle is ~~a biodegradable or nodegradable polymer and~~ less than 1.0 mm in diameter; and

administering the functionalized particle to a subject in need ~~mammal~~, wherein the functionalized particle is capable of crossing the physiologic barrier ~~and~~ to exert ~~exerts~~ an effect.

19. (CURRENTLY AMENDED) The method of claim 17, wherein the functionalized portion is hydrazide or an amine ~~particle is a polymer selected from the group consisting of polyelectrolyte, hydroxypropyl cellulose, N-isopropylacrylamide, and hyaluronan~~.

20. (ORIGINAL) The method of claim 17, wherein the effect is selected from the group consisting of diagnostic, therapeutic, protective and preventative.

21. (ORIGINAL) The method of claim 17, wherein administering is selected from the group consisting of intraocularly, by injection, or by mouth.

22. (ORIGINAL) The method of claim 17, wherein the functionalized particle is less than 700 nm.

23. (CURRENTLY AMENDED) A method of crossing a physiologic barrier with a functionalized particle comprising the steps of:

preparing a functionalized N-isopropylacrylamide particle with a tag, wherein the functionalized portion of the particle is a nitrogen-containing functional group ~~selected from the group consisting of acrylic acid, 2-hydroxyethyl acrylate, 2-acrylamido-2-methyl-1-propanesulfonic acid, allylamine, carboxyl group, hydroxyl group, sulfonic group, aldehyde goup, and amine group~~, and wherein the particle is less than 1.0 mm in diameter; and

administering the functionalized N-isopropylacrylamide particle, wherein the functionalized N-isopropylacrylamide particle crosses ~~is capable of crossing~~ the physiologic barrier and exerts an effect.

24. (CURRENTLY AMENDED) The method of claim 23, wherein the tag is an antibody ~~selected from the group consisting of drug, antibodiy, ligand, antigen, protein, peptide, nucleic acid sequence, fatty acid moiety, carbohydrate moiety, label, light-emitting species, radioactive species, nuclear species, contrast agent, and combinations thereof~~.

25. (ORIGINAL) The method of claim 23, wherein the effect is selected from the group consisting of diagnostic, therapeutic, protective and preventative.

26. (ORIGINAL) The method of claim 23, wherein administering is selected from the group consisting of intraocularly, by injection, or by mouth.

27. (ORIGINAL) The method of claim 23, wherein the functionalized N-isopropylacrylamide particle is less than 700 nm.